

-- REMARKS --

The present response replies to an Office Action dated July 8, 2008. Claims 1, 3-6, and 8-10 are currently pending in the present application. In the Office Action, the Examiner rejected claims 1, 3-6, and 8-10 on various grounds. The Applicant responds to each ground of rejection as subsequently recited herein and requests reconsideration of the present application.

35 U.S.C. §103 Rejections

Obviousness is a question of law, based on the factual inquiries of 1) determining the scope and content of the prior art; 2) ascertaining the differences between the claimed invention and the prior art; and 3) resolving the level of ordinary skill in the pertinent art. *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). See MPEP 2143.03. The Applicant respectfully asserts that the cited references fail to teach or suggest all the claim limitations.

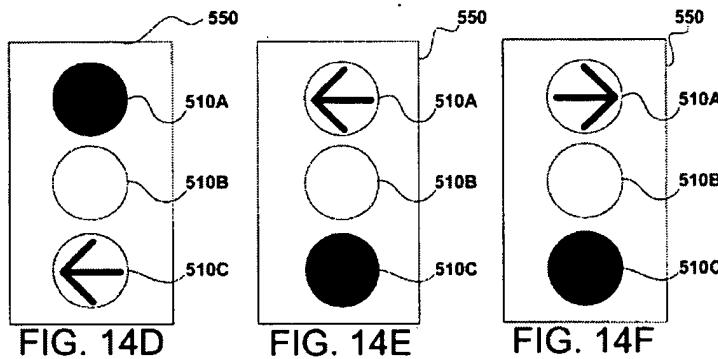
A. Claims 1 and 3-5 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,809,655 to Colby (the *Colby* patent) in view of U.S. Patent No. 6,362,578 to Swanson, *et al.* (the *Swanson* patent).

The Applicant respectfully asserts that the *Colby* patent and the *Swanson* patent, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims. The *Colby* patent and the *Swanson* patent fails to disclose, teach, or suggest a traffic light wherein said switch controller (21) is further operable to prevent simultaneous closure of said first electronic switch (32) and said second electronic switch (42), as recited in independent claim 1.

On page 6 of the present Office Action dated July 8, 2008, the Examiner asserted that the single control module including electronics operable to prevent simultaneous closure of the electronic switches associated with the LED circuits would have been obvious for no other reason than displaying distinguishable illuminated signals to control the direction and flow of traffic at an intersection. The Applicant respectfully disagrees. The *Colby* patent explicitly

teaches simultaneous illumination of multiple lamps, which teaches away from preventing simultaneous closure of electronic switches as claimed.

The *Colby* patent discloses simultaneous illumination of multiple lamps, which requires simultaneous actuation (closing or opening) of electronic switches. In one embodiment, during a period of peak traffic volume, a pattern of a red left turn arrow 310 is displayed while at the same time another lamp 510 in the same traffic signal 550 displays a green up arrow. *See* column 9, lines 4-8. Figures 14C through 14I show simultaneous illumination of red lamp 510A and green lamp 510C, as shown below for Figures 14D through 14F. *See* Figures 14C-14I; column 3, lines 13-34; column 9, lines 13-43.



Thus, the *Colby* patent requires simultaneous closure of electronic switches, rather than preventing simultaneous closure as claimed, and teaches away from the present invention.

On page 6 of the present Office Action dated July 8, 2008, the Examiner noted that the present Application requires only a properly working switch controller for prevention of simultaneous closure of electronic switches. This points out one aspect of the Applicant's invention and further supports allowance of the present Application.

The Applicant also respectfully disagrees with the Examiner's assertion that the *Colby* patent discloses first to fifth LED circuits selectively controlled by a single control module. At most, the prior art discussed by the *Colby* patent discloses traffic signals with various numbers and configurations of lamps, but is silent as to the lamps being controlled by a single control module. In a typical installation, several traffic signals are supported by one or more supporting

elements and coupled through a single control module including electronics. *See Figure 4B; column 1, line 43 through column 2, line 4.*

The Examiner noted that the *Swanson* patent does not mention that the switch controller is operable to prevent simultaneous closure of the first to third electronic switches, but asserted that this limitation would be within a routine skill of an artisan and an obvious design choice. The Applicant respectfully disagrees. The modification suggested by the Examiner makes the automobile rear combination lamp driver circuit of the *Swanson* patent inoperable and defeats its purpose.

The *Swanson* patent discloses a plurality of arrays 14, 16 and 18 of light emitting diodes, such as the turn, stop and tail LED's, positioned at the rear portion 20 of an automobile. The drive circuit 10 includes the arrays 14, 16, 18 of light emitting diodes 22 and a respective transistor 24, 26, 28. A PWM controller 38 has an output 38b connected to selected transistors for driving selected transistors 26, 28. *See Figure 1; column 2, line 59 through column 3, line 22.*

The modification suggested by the Examiner makes the automobile rear combination lamp driver circuit of the *Swanson* patent inoperable because preventing simultaneous closure of the first and second electronic switches would prevent simultaneous operation of two of the LED arrays. For example, when the transistor 28 was closed to light the tail LEDs, the turn and stop LEDs would be disabled if simultaneous closure were prevented. This would be unsafe and render the automobile rear combination lamp driver circuit inoperable. The modification suggested by the Examiner defeats the purpose of the automobile rear combination lamp driver circuit in reducing the time to light the brake lamp, since the break lamp would be disabled. *See column 1, lines 11-19.*

Further, the *Swanson* patent is in the art area of driver circuits for LEDs used in the rear combination lights of automobiles, not traffic lights of the Applicant's invention. *See Figure 1; column 1, lines 4-32; column 2, lines 59-64.*

Claims 3-5 depend directly or indirectly from independent claim 1. Therefore, the dependent claims include all the elements and limitations of independent claim 1. The Applicant respectfully submits that dependent claims 3-5 are allowable over the *Colby* patent in view of the

Swanson patent for at least the same reasons as set forth above with respect to independent claim 1.

The Applicant also submits that the *Colby* patent and the *Swanson* patent fail to disclose, teach, or suggest a traffic light: wherein said switch controller (21) is further operable to prevent simultaneous closure of said second electronic switch (42) and said third electronic switch (52) as recited in dependent claim 3; wherein said switch controller (21) is further operable to prevent simultaneous closure of said third electronic switch (52) and said fourth electronic switch (46) as recited in dependent claim 4; or wherein said switch controller (21) is further operable to prevent simultaneous closure of said fourth electronic switch (46) and said fifth electronic switch (56) as recited in dependent claim 5.

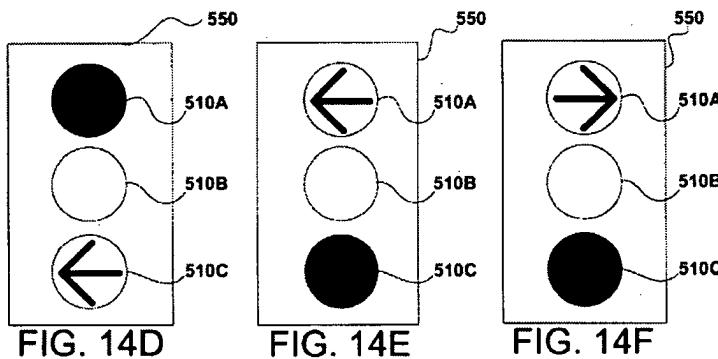
Withdrawal of the rejection of claims 1 and 3-5 under 35 U.S.C. §103(a) as being unpatentable over the *Colby* patent in view of the *Swanson* patent is respectfully requested.

B. Claims 6 and 8-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,809,655 to Colby (the *Colby* patent) in view of U.S. Patent Publication No. 2002/0175826 to Hutchison, *et al.* (the *Hutchison* publication).

The Applicant respectfully asserts that the *Colby* patent and the *Hutchison* publication, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims. The *Colby* patent and the *Hutchison* publication fails to disclose, teach, or suggest a traffic light said switch controller (71) is further operable to prevent simultaneous opening of said first electronic switch (81) and said second electronic switch (91), as recited in independent claim 6.

On page 6 of the present Office Action dated July 8, 2008, the Examiner asserted that the single control module including electronics operable to prevent simultaneous closure of the electronic switches associated with the LED circuits would have been obvious for no other reason than displaying distinguishable illuminated signals to control the direction and flow of traffic at an intersection. The Applicant respectfully disagrees. The *Colby* patent explicitly teaches simultaneous illumination of multiple lamps, which teaches away from preventing simultaneous opening of electronic switches as claimed.

The *Colby* patent discloses simultaneous illumination of multiple lamps, which requires simultaneous actuation (closing or opening) of electronic switches. In one embodiment, during a period of peak traffic volume, a pattern of a red left turn arrow 310 is displayed while at the same time another lamp 510 in the same traffic signal 550 displays a green up arrow. *See* column 9, lines 4-8. Figures 14C through 14I show simultaneous illumination of red lamp 510A and green lamp 510C, as shown below for Figures 14D through 14F. *See* Figures 14C-14I; column 3, lines 13-34; column 9, lines 13-43.



Thus, the *Colby* patent requires simultaneous actuation (closing or opening) of electronic switches, rather than preventing simultaneous opening as claimed, and teaches away from the present invention.

On page 6 of the present Office Action dated July 8, 2008, the Examiner noted that the present Application requires only a properly working switch controller for prevention of simultaneous closure of electronic switches. This points out one aspect of the Applicant's invention and further supports allowance of the present Application.

The Applicant also respectfully disagrees with the Examiner's assertion that the *Colby* patent discloses first to fifth LED circuits selectively controlled by a single control module. At most, the prior art discussed by the *Colby* patent discloses traffic signals with various numbers and configurations of lamps, but is silent as to the lamps being controlled by a single control module. In a typical installation, several traffic signals are supported by one or more supporting elements and coupled through a single control module including electronics. *See* Figure 4B; column 1, line 43 through column 2, line 4.

The Examiner noted that the *Hutchison* publication does not mention being operable to prevent simultaneous opening of the first, second, and third electronic switches, but asserted that this limitation would be within a routine skill of an artisan and an obvious design choice. The Applicant respectfully disagrees. The modification suggested by the Examiner makes the warning light of the *Hutchison* publication inoperable and defeats its purpose.

The *Hutchison* publication discloses a reconfigurable LED array having a plurality of LED sets, each LED set adapted to be enabled for a different DC operating voltage. The LED array is configured as four sets of LEDs, one main array and three additional LED arrays. At a lower most specified operating DC voltage, such as 35 volts, only the main LED array is PWM driven. However, as the operating voltage increases to 48 volts, the other three LED arrays are selectively driven to increase light output as the operating voltage increases. In a normal mode of operation, such as at a nominal 48 volts, all LED sets are driven. *See* paragraphs [0006], [0007].

The modification suggested by the Examiner makes the traffic light of the *Hutchison* publication inoperable because preventing simultaneous opening of the first, second, and third electronic switches would prevent the traffic light from selectively driving the three additional LED arrays so that the three additional LED arrays are energized in increasing numbers with increasing voltage. *See* the table of paragraph [0018]. The modification suggested by the Examiner defeats the purpose of the traffic light of the *Hutchison* publication because the series of LEDs would not be selectively enabled, such that one, two, three or all four of the LED sets can be enabled and pulsed with modulated to achieve a desired light output, even as the DC voltage degrades from a pre-determined specified level, such as 48 volts, all the way down to roughly 29 volts. *See* the table of paragraph [0008].

The *Hutchison* publication also teaches away from the modification suggested by the Examiner. In a normal mode of operation, such as at a nominal 48 volts, all LED sets are driven. *See* paragraph [0007]. Therefore, the *Hutchison* publication teaches that all LED sets are driven together, not that opening of one switch should prevent simultaneous opening of any other switch, and teaches away from preventing simultaneous opening of said first electronic switch and said second electronic switch as recited in independent claim 6.

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Claims 8-10 depend directly or indirectly from independent claim 6. Therefore, the dependent claims include all the elements and limitations of independent claim 6. The Applicant respectfully submits that dependent claims 8-10 are allowable over the *Colby* patent in view of the *Hutchinson* publication for at least the same reasons as set forth above with respect to independent claim 6.

The Applicant also submits that the *Colby* patent and the *Hutchinson* publication fail to disclose, teach, or suggest a traffic light: wherein said switch controller (71) is further operable to prevent simultaneous opening of said second electronic switch (91) and said third electronic switch (101) as recited in dependent claim 8; wherein said switch controller (71) is further operable to prevent simultaneous opening of said third electronic switch (101) and said fourth electronic switch (94) as recited in dependent claim 9; or wherein said switch controller (71) is further operable to prevent simultaneous opening of said fourth electronic switch (94) and said fifth electronic switch (104) as recited in dependent claim 10.

Withdrawal of the rejection of claims 6 and 8-10 under 35 U.S.C. §103(a) as being unpatentable over the *Colby* patent in view of the *Hutchinson* publication is respectfully requested.

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SUMMARY

Reconsideration of the rejection of claims 1, 3-6, and 8-10 is requested. The Applicant respectfully submits that claims 1, 3-6, and 8-10 fully satisfy the requirements of 35 U.S.C. §§102, 103 and 112. In view of the foregoing, favorable consideration and early passage to issue of the present application is respectfully requested.

Dated: September 5, 2008

Respectfully submitted,
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